IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): V.N. Kumar et al.
Case: 1-1
Serial No.: 10/620,258
Filing Date: July 15, 2003
Group: 2453
Examiner: LaShanya R. Nash

Title: Traffic Generator with Enhanced Burst Modeling Feature

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APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants (hereinafter "Appellants") hereby appeal the final rejection dated November 10, 2008 of claims 1, 3-11 and 13-21 of the above-identified application.

REAL PARTY IN INTEREST

The present application is assigned of record to Agere Systems Inc. On April 2, 2007, the assignee Agere Systems Inc. completed a merger with LSI Logic Corporation, with the resulting entity being named LSI Corporation. LSI Corporation is the real party in interest.

RELATED APPEALS AND INTERFERENCES

As noted in the present specification at page 1, lines 4-7, and page 4, lines 7-9, the present invention is related to the invention described in commonly-assigned and concurrently-

filed U.S. Patent Application Serial No. 10/620,044, entitled "Extensible Traffic Generator for Synthesis of Network Data Traffic." This application is the subject of a pending Board appeal.

STATUS OF CLAIMS

The present application was filed on July 15, 2003 with claims 1-17. Claim 2 was canceled and claims 18-21 were added in a previous response. Claims 1 and 3-21 remain pending, and claims 1, 16 and 17 are the independent claims.

Claim 12 is indicated as containing allowable subject matter. Each of claims 1, 3-11 and 13-21 stand rejected under 35 U.S.C. §103(a). Claims 1, 3-11 and 13-21 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method of generating data traffic in a traffic generator. The method comprises the steps of generating a first type of traffic in accordance with a given distribution, and generating a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst. A determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. The step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

As discussed in the specification at, for example, page 6, line 22, to page 7, line 16, and page 8, lines 13-21, an exemplary method of generating data traffic in a traffic generator (e.g., 100 in FIG. 1) comprises the steps of generating a first type of traffic (e.g., comparative traffic) in accordance with a given distribution, and generating a second type of traffic (e.g., compensatory traffic) different than the first type of traffic, the second type of traffic comprising at least one traffic burst.

As discussed in the specification at, for example, page 6, line 26, to page 7, line 2; page 7, lines 12-16; and page 8, lines 13-28, a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. As discussed in the specification at, for example, page 6, line 22, to page 7, line 2; page 8, line 13, to page 9, line 2; and page 12, lines 1-8, the step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

Independent claim 16 is directed to an apparatus for generating data traffic. The apparatus comprises an information processing device having a processor and a memory. The information processing device implements a traffic generator. The traffic generator is operative to generate a first type of traffic in accordance with a given distribution, and to generate a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst. A determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. The second type of traffic is generated by accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

As discussed in the specification at, for example, page 4, lines 10-28, an exemplary apparatus for generating data traffic comprises an information processing device having a processor and a memory, wherein the information processing device implements a traffic generator (e.g., 100 in FIG. 1). As discussed in the specification at, for example, page 6, line 22, to page 7, line 16, and page 8, lines 13-21, the traffic generator is operative to generate a first type of traffic (e.g., comparative traffic) in accordance with a given distribution, and to generate a second type of traffic (e.g., compensatory traffic) different than the first type of traffic, the second type of traffic comprising at least one traffic burst.

As discussed in the specification at, for example, page 6, line 26, to page 7, line 2; page 7, lines 12-16; and page 8, lines 13-28, a determination as to whether or not the traffic burst is

generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. As discussed in the specification at, for example, page 6, line 22, to page 7, line 2; page 8, line 13, to page 9, line 2; and page 12, lines 1-8, the second type of traffic is generated by accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

Independent claim 17 is directed to an article of manufacture comprising a storage medium containing one or more software programs for use in generating data traffic in a traffic generator. The one or more software programs when executed implement the steps of generating a first type of traffic in accordance with a given distribution, and generating a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst. A determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. The step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

As discussed in the specification at, for example, page 4, lines 10-28, an exemplary article of manufacture comprises a storage medium containing one or more software programs for use in generating data traffic in a traffic generator (e.g., 100 in FIG. 1). As discussed in the specification at, for example, page 6, line 22, to page 7, line 16, and page 8, lines 13-21, the one or more software programs when executed implement the steps of generating a first type of traffic (e.g., comparative traffic) in accordance with a given distribution, and generating a second type of traffic (e.g., compensatory traffic) different than the first type of traffic, the second type of traffic comprising at least one traffic burst.

As discussed in the specification at, for example, page 6, line 26, to page 7, line 2; page 7, lines 12-16; and page 8, lines 13-28, a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. As discussed in the specification at, for

example, page 6, line 22, to page 7, line 2; page 8, line 13, to page 9, line 2; and page 12, lines 1-8, the step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

Illustrative embodiments of the claimed invention provide a number of significant advantages over conventional arrangements. As discussed in the specification at, for example, page 13, lines 13-20, a traffic generator with an enhanced burst modeling feature in accordance with an illustrative embodiment of the invention provides improved efficiency and accuracy in modeling of "real-life" traffic behavior in a network-based communication system. A high degree of flexibility and user control in the burst generation process is provided. Also, illustrative embodiments of the invention can be readily implemented in a practical hardware or software traffic generator. Illustrative embodiments of the invention allow a wide variety of burst-related processing applications, such as the benchmarking of communication systems against burst behavior, to be implemented in an efficient manner.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 3-5, 11 and 14-17 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 7,013,255 (hereinafter "Smith") in view of St. Hontas et al., "ATM Traffic Generator Card. An Integrated Solution," Proceedings of the Third IEEE Symposium on Computers and Communications (ISCC '98), 1998, pages 161-165 (hereinafter "St. Hontas").

2. Claims 6-10, 13 and 18-21 are rejected under 35 U.S.C. §103(a) as unpatentable over Smith and St. Hontas in view of Bae & Suda, "Survey of Traffic Control Schemes and Protocols in ATM Networks," Proceedings of the IEEE, Vol. 79 No. 2, Feb. 1991, pages 170-189 (hereinafter "Bae").

ARGUMENT

1. Rejection of claims 1, 3-5, 11 and 14-17 under §103(a) over Smith and St. Hontas

With respect to the present §103 rejection of independent claim 1, Appellants respectfully submit that the relied-upon combination of Smith and St. Hontas fails to teach or suggest every limitation of claim 1.

For example, in formulating the rejection of claim 1 on page 6 of the final Office Action, the Examiner argues that Smith at column 6, lines 30-45, teaches "generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic (i.e. percentage of the total number of packets in a specified time interval"). The relied-upon portion of Smith states:

> In some applications, packets (such as those containing data) will have interarrival times characterized by a bimodal distribution; that is, some of the packets will have interarrival times that are distributed normally and other of the packets will have interarrival times that are distributed lognormally. In such applications, the numbers of packets in each category must be determined. This can be done by assigning a percentage or range of percentages to the portion of the packets having normally distributed interarrival times and/or lognormally distributed interarrival times. These percentages or ranges of percentages can then be multiplied by the total number of packets passing through or routed by the switch in a specified time interval to yield the number of packets in each category (i.e., having normally or lognormally distributed interarrival times).

Appellants respectfully submit that the relied-upon portion of Smith discloses a technique for determining the number of packets passing through or routed by the switch in a specified time interval which have normally distributed interarrival times and lognormally distributed interarrival times. Even if these packets could somehow be characterized as accumulated compensatory traffic, there is no teaching or suggestion directed to generating a traffic burst based at least in part on such accumulated compensatory traffic.

St. Hontas fails to remedy the deficiency of Smith with regard to the limitation of claim 1 at issue, and hence the proposed combination of Smith and St. Hontas fails to teach or suggest every limitation of claim 1.

Moreover, even if one could somehow combine Smith and St. Hontas so as to reach the limitations of claim 1, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR International Co. v. Teleflex Inc.*, 127 S.Ct 1727, 1741, 82 USPQ2d 1385, 1396 (U.S. 2007) Rather, in cases such as these, "when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR*, 127 S.Ct at 1740, 82 USPQ2d at 1395 (citing *United States* v. *Adams*, 383 U.S. 39, 51-52, 148 USPQ 479, 484 (1966)).

More particularly, in formulating the present rejection of claim 1, the Examiner concedes that Smith fails to disclose the limitation wherein a determination as to whether or not a traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals. Instead, the Examiner argues that this limitation is met by Section 4.1.1 of St. Hontas. Specifically, the Examiner relies primarily on the last sentence of the first paragraph of page 3 of St. Hontas, which states that "dependencies between a burst and the following silence, or autocorrelative (e.g., autoregressive) laws between the bursts from cycle to cycle are easily implementable."

However, Appellants believe that one skilled in the art would not have been motivated to modify Smith to incorporate the techniques disclosed in the relied-upon portion of St. Hontas in view of the explicit teachings of Smith directly away from such a modification.

In arguing that Smith does not teach away from the proposed combination, at page 3, last paragraph, of the final Office Action, the Examiner argues that column 1, lines 57-64, of "Smith expressly discloses that the autoregressive model has been known to be successful in certain packet-based environments, like ATM." Appellants respectfully note that Smith at column 1, line 57, to column 2, line 3, states as follows, with emphasis supplied:

> Other models have been considered in modeling ATM traffic using random number generators, including the Markov Modulated model, the Transform Expand Sample model, the Autoregressive model, the Fluid model, and the Self-similar model. Although these models have been found to have varying degrees of success for modeling Ethernet traffic (which, like ATM networks, uses a packet-based protocol), they have been largely unsuccessful in characterizing the bursty nature of ATM traffic.

> The failure of these models is in part due to the differences between ATM networks and other type [sic] of packet networks. For example, ATM is a connection-oriented protocol with a fixed length packet size. This contrasts with Ethernet which is a connectionless protocol with variable length packet size.

Appellants respectfully disagree with the Examiner's characterization of the relied-upon portion of Smith. Rather, Appellants respectfully submit that the relied-upon portion of Smith indicates that while the autoregressive model has been found to have varying degrees of success for modeling Ethernet traffic, the autoregessive model has been "largely unsuccessful" and a "failure" in characterizing the bursty nature of ATM traffic. Despite there being certain similarities between Ethernet networks and ATM networks, this failure of the autoregessive model with regard to ATM networks is in part to due to the differences between ATM networks and Ethernet networks. For example, although both Ethernet and ATM are packet-based protocols, Ethernet is a connectionless protocol with variable length packet size, while ATM is a connection-oriented protocol with a fixed length packet size.

As such, Appellants respectfully disagree with the Examiner's characterization of the relied-upon portion of Smith as disclosing that the autoregressive model has been known to be successful in certain packet-based environments like ATM. To the contrary, Smith itself teaches directly away from the Examiner's proposal to modify Smith so as to implement the autoregessive model allegedly disclosed by St. Hontas.

On page 3, last paragraph, of the final Office Action, the Examiner argues that "although Smith discloses examples and preferred embodiments employed in order to simulate the bursty nature of ATM traffic, this disclosure does not constitute a teaching away from a broader disclosure or non-preferred embodiment of an autoregressive model."

Appellants respectfully submit that this is not a situation where "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004) Rather, one skilled in the art faced with the teachings of Smith explicitly indicating failure of the autoregressive model in the ATM context, would clearly not look to modify the Smith arrangements with an ATM traffic generator based on autoregressive techniques as described in

St. Hontas. See, e.g., *In re ICON Health and Fitness Inc.*, 496 F.3d 1374, 1381, 83 USPQ2d 1746, 1751 (Fed. Cir. 2007) (quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994)) ("A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.")

It is believed that claim 1 is not obvious over the proposed combination of Smith and St. Hontas. Independent claims 16 and 17 include limitations similar to those of claim 1 and are hence believed allowable for reasons similar to those identified above with regard to claim 1.

Dependent claims 3-5, 14 and 15 are believed allowable at least by virtue of their dependency from independent claim 1.

2. Rejection of claims 6-10, 13 and 18-21 under §103(a) over Smith, St. Hontas and Bae

Claims 6, 9, 18 and 20

Dependent claim 6 is believed allowable at least by virtue of its dependence from independent claim 1. Claim 6 is also believed to define separately-patentable subject matter over the cited art. More particularly, claim 6 specifies that the step of generating the second type of traffic further comprises the step of determining, for each of one or more time intervals, if an amount of the traffic of the first type generated during that interval is less than a comparison level, and if so, adding an amount of compensatory traffic to a burst container having a capacity given by a burst size.

In formulating the present rejection of dependent claim 6, the Examiner concedes that the combination of Smith and St. Hontas fails to disclose the above claim limitations. Instead, the Examiner relies upon Bae at page 177, left column, line 18, to page 178, right column, line 8. Appellants respectfully submit that the relied-upon portion of Bae merely discloses a conventional leaky-bucket bandwidth enforcement mechanism in which arriving cells must obtain a token from a token pool in order to enter the network; if there is no token, a cell must in wait in the queue until a new token is generated. If the number of tokens in the token pool exceeds some predefined threshold value, the process of token generation stops.

The Examiner analogizes Bae's threshold level of tokens in the token pool to the recited comparison level and Bae's queue to the burst container having a capacity given by a burst size. Even assuming that these elements of Bae could in fact be considered analogous to those recited in claim 6, the relied-upon portion of Bae fails to meet the limitations of claim 6.

Specifically, the Examiner argues that Bae teaches a technique wherein, if a number of cells arriving during an interval is less than the threshold value of tokens in the token pool, an amount of compensatory traffic is added to the queue. Appellants respectfully disagree and instead note that, in the technique disclosed by Bae, if the number of cells arriving during an interval is less than the threshold value of tokens in the token pool, all of the arriving cells will be able to immediately obtain a token from the token pool and hence will be able to immediately enter the network without waiting in the queue until a new token is generated. In other words, if a number of cells arriving during an interval is less than the threshold value of tokens in the token pool, no traffic is added to the queue.

In the final Office Action at page 4, first paragraph, the Examiner argues that "Bae discloses that if the threshold value is exceeded then the process of token generation stops, or implicitly if the threshold value is not reached then additional tokens are generated and thus traffic is added." (emphasis in original)

Appellants respectfully submit that the generation of additional tokens will not result in additional traffic being added to the queue. Rather, as noted above, arriving cells will be able to immediately obtain a token from the token pool and hence will be able to immediately enter the network without waiting in the queue.

Accordingly, Bae fails to supplement the teachings of Smith and St. Hontas so as to meet the limitations of claim 6. Dependent claims 18 and 20 include limitations similar to those recited in claim 6 and are therefore believed to be similarly patentable.

Claim 9 is believed allowable at least by virtue of their dependency from independent claim 1 and dependent claim 6, the patentability of which are discussed above.

Claim 7

Claim 7 is believed allowable at least by virtue of its dependency from independent claim 1 and dependent claim 6, the patentability of which are discussed above. Claim 7 is also believed to define separately-patentable subject matter over the cited art.

Dependent claim 7 includes a limitation wherein the traffic burst is generated when a total amount of accumulated traffic in the burst container is greater than or equal to the burst size. In formulating the present rejection of dependent claim 7, the Examiner argues that this limitation is taught by Smith at column 6, lines 46-57, and column 2, line 55, to column 3, line 2.

Appellants respectfully submit that both of the relied-upon portions are directed to multiplying respective percentages of a packet stream that corresponds to respective pluralities of packets to provide the respective numbers of packets in the pluralities of packets. There is no teaching or suggesting directed toward any determination of whether a total amount of accumulated traffic in a burst container is greater than or equal to a burst size, much less generating a traffic burst responsive to such a determination.

As such, claim 7 is believed to be allowable over the cited art.

Claim 8

Claim 8 is believed allowable at least by virtue of its dependency from independent claim 1 and dependent claim 6, the patentability of which are discussed above. Claim 8 is also believed to define separately-patentable subject matter over the cited art. Specifically, dependent claim 8 includes a limitation wherein the burst size is determined as a function of a mean burst size and a corresponding variation range. In formulating the present rejection of dependent claim 8, the Examiner argues that this limitation is taught by Smith at column 6, lines 31-45.

Appellants respectfully submit that the relied-upon portion of Smith is directed to "assigning a percentage or range of percentages to the portion of the packets having normally distributed and/or lognormally distributed interarrival times. These percentages or ranges of percentages can then be multiplied by the total number of packets passing through or routed by the switch in a specified time interval to yield the number of packets in each category (i.e., having normally or lognormally distributed interarrival times."

There is no teaching or suggesting directed toward determining a burst size as a function of a mean burst size and a corresponding variation range. Thus, claim 8 is believed to be allowable over the cited art.

Claim 10

Claim 10 is believed allowable at least by virtue of its dependency from independent claim 1 and dependent claim 6, the patentability of which are discussed above. Claim 10 is also believed to define separately-patentable subject matter over the cited art. Specifically, dependent claim 10 includes a limitation wherein the burst size is determined as a function of a mean compensatory-accumulation size and and a corresponding variation range. In formulating the present rejection of dependent claim 10, the Examiner argues that this limitation is taught by Smith at column 6, lines 31-45.

Appellants respectfully submit that the relied-upon portion of Smith is directed to "assigning a percentage or range of percentages to the portion of the packets having normally distributed and/or lognormally distributed interarrival times. These percentages or ranges of percentages can then be multiplied by the total number of packets passing through or routed by the switch in a specified time interval to yield the number of packets in each category (i.e., having normally or lognormally distributed interarrival times."

There is no teaching or suggesting directed toward determining a burst size as a function of a mean compensatory-accumulation size and a corresponding variation range. Thus, claim 10 is believed to be allowable over the cited art.

Claims 13, 19 and 21

Dependent claim 13 is believed allowable at least by virtue of its dependence from independent claim 1. Claim 13 is also believed to define separately-patentable subject matter over the cited art.

In formulating the present rejection of dependent claim 13, the Examiner concedes that the combination of Smith and St. Hontas fails to disclose the claim limitation directed to generating a plurality of traffic bursts in a manner which tends to compensate for temporary

reductions in the amount of traffic of another type so as to substantially maintain a particular level of traffic flow.

Instead, the Examiner argues that this limitation is taught by Bae at page 175, left column, lines 30-58, and page 176, left column, lines 45-62, which the Examiner characterizes as disclosing that "traffic bursts are multiplexed to maintain constant levels." Appellants respectfully disagree with the Examiner's characterization of the relied-upon portions of Bae. Rather, Appellants respectfully submit that Bae at page 175, left column, lines 30-58, is directed to proposed definitions of burstiness. Page 176, left column, lines 45-62, is directed to investigations of statistical multiplexing of bursty sources, and more specifically how the cell loss probability and the average delay time varies as a function of various parameters, such as the number of sources, the peak bit rate, and the burstiness of the sources.

The relied-upon portions of Bae contain no teaching or suggestion directed to generating traffic bursts, much less doing so in a manner which tends to compensate for temporary reductions in the amount of traffic of another type so as to substantially maintain a particular level of traffic flow.

In the final Office Action at page 4, last paragraph, the Examiner asserts that "Bae expressly discloses allowing for a certain degree of burstiness to further enforce control of the traffic flow. Additionally, Bae discloses that the traffic flow is controlled through the distribution of tokens, which creates bursts that maintain an average input rate of the traffic. Clearly, it can be determined that in order to maintain an average input rate, that the bursts must correspond to the amount of traffic entering the network, which is inclusive of reductions or increases."

Appellants respectfully submit that the relied-upon portions of Bae do not teach generating traffic bursts, but rather merely indicate that it may be desirable to maintain some of the pre-existing burstiness. Bae fails to teach or suggest generating traffic bursts in a manner which tends to compensate for temporary reductions in the amount of traffic of another type so as to substantially maintain a particular level of traffic flow.

Accordingly, Bae fails to supplement the teachings of Smith and St. Hontas so as to meet the limitations of claim 13. Dependent claims 19 and 21 include limitations similar to those recited in claim 13 and are therefore believed to be similarly patentable.

In view of the above, Appellants believe that claims 1 and 3-21 are in condition for allowance, and respectfully request the reversal of the §103(a) rejections.

Respectfully submitted,

/joseph b. ryan/

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CLAIMS APPENDIX

1. A method of generating data traffic in a traffic generator, the method comprising the steps of:

generating a first type of traffic in accordance with a given distribution; and

generating a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst;

wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals;

wherein the step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

2. (Canceled)

3. The method of claim 1 wherein the first type of traffic comprises comparative traffic characteristic of non-burst traffic.

4. The method of claim 1 wherein the given distribution comprises a Poisson distribution.

5. The method of claim 1 wherein the given distribution comprises a Gaussian distribution.

6. The method of claim 1 wherein the step of generating the second type of traffic further comprises the step of determining, for each of the one or more time intervals, if an amount of the traffic of the first type generated during that interval is less than a comparison level, and if so adding an amount of compensatory traffic to a burst container having a capacity given by a burst size.

7. The method of claim 6 wherein the traffic burst is generated when a total amount of accumulated traffic in the burst container is greater than or equal to the burst size.

8. The method of claim 6 wherein the burst size is determined as a function of a mean burst size and a corresponding variation range.

9. The method of claim 6 wherein the amount of compensatory traffic comprises an amount of traffic given by a compensatory-accumulation size.

10. The method of claim 9 wherein the compensatory-accumulation size is determined as a function of a mean compensatory-accumulation size and a corresponding variation range.

11. The method of claim 1 wherein the one or more time intervals each comprise sample slot times.

12. The method of claim 1 wherein the step of generating the second type of traffic further comprises generating a plurality of traffic bursts, wherein a given one of the traffic bursts is generated by:

determining a current burst size and a current compensatory-accumulation size;

creating an initially-empty burst container having a capacity that is equal to the burst size;

adding compensatory traffic to the burst container whenever the total traffic of the first type generated within a given sample slot time is less than a comparison level, such that for each such addition of compensatory traffic, a level of traffic in the burst container increases by the compensatory-accumulation size; and

generating the given traffic burst when the burst container level is greater than or equal to the burst size.

13. The method of claim 1 wherein the traffic of the second type comprises a plurality of traffic bursts which are generated in a manner which tends to compensate for temporary reductions in the amount of traffic of the first type so as to substantially maintain a particular level of traffic flow.

14. The method of claim 1 wherein the traffic generator comprises a hardware traffic generator.

15. The method of claim 1 wherein the traffic generator comprises a software traffic generator.

16. An apparatus for generating data traffic, the apparatus comprising an information processing device having a processor and a memory, the information processing device implementing a traffic generator operative:

to generate a first type of traffic in accordance with a given distribution; and

to generate a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst;

wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals; and

wherein the second type of traffic is generated by accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

17. An article of manufacture comprising a storage medium containing one or more software programs for use in generating data traffic in a traffic generator, wherein the one or more software programs when executed implement the steps of:

generating a first type of traffic in accordance with a given distribution; and

generating a second type of traffic different than the first type of traffic, the second type of traffic comprising at least one traffic burst;

wherein a determination as to whether or not the traffic burst is generated for a given time interval is based at least in part on an amount of the first type of traffic generated over one or more previous time intervals; and

wherein the step of generating the second type of traffic further comprises accumulating compensatory traffic over one or more of the time intervals for which the first type of traffic is generated, and generating the traffic burst based at least in part on the accumulated compensatory traffic.

18. The apparatus of claim 16 wherein generation of the second type of traffic includes determining, for each of the one or more time intervals, if an amount of the traffic of the first type generated during that interval is less than a comparison level, and if so adding an amount of compensatory traffic to a burst container having a capacity given by a burst size.

19. The apparatus of claim 16 wherein the traffic of the second type comprises a plurality of traffic bursts which are generated in a manner which tends to compensate for temporary reductions in the amount of traffic of the first type so as to substantially maintain a particular level of traffic flow.

20. The article of manufacture of claim 17 wherein the step of generating the second type of traffic further comprises the step of determining, for each of the one or more time intervals, if

an amount of the traffic of the first type generated during that interval is less than a comparison level, and if so adding an amount of compensatory traffic to a burst container having a capacity given by a burst size.

21. The article of manufacture of claim 17 wherein the traffic of the second type comprises a plurality of traffic bursts which are generated in a manner which tends to compensate for temporary reductions in the amount of traffic of the first type so as to substantially maintain a particular level of traffic flow.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

No decision has been rendered in the related proceeding identified above.